Online Testing

Technology Readiness Analysis

For

Clarendon School District 3

Overview of Clarendon School District 3

Clarendon School District 3 is located in the mideastern part of the state with the District Office located in Turbeville, SC. As of February 2016, the district is comprised of 2 schools, serving approximately 1178 students. Test scores for students in grades 3-8 in the district were below the state average in all Reading, Writing, and Math, but above the state average in English, Science and Social Studies in 2015 and leadership is working aggressively to take the appropriate measures to enhance the learning experience and increase student achievement rates in 2016.

Key Data Points

- Dr. Connie Dennis has served as Superintendent for 8 years
- District Poverty Level is 67%
- Teacher Retention Rate is 93%
- Breakdown of schools:
  - Walker-Gamble Elementary, 66 years old, grades PK-5, 494 students
  - East Clarendon Middle-High, 64 years old, grades 6-12, 684 students

Participating District Personnel

Name of District Staff Member	Roles/Responsibilities
Tim Timmons	Technology Coordinator

Purpose of This Analysis

The purpose of this analysis is to provide an independent evaluation of the ability of Clarendon School District 3 to organize and conduct online testing for their students in grades 3-8 starting in the spring of 2017. Federal online testing guidelines will take effect in 2018 but South Carolina's legislature has implemented plans for all districts to begin formal online testing in March of 2017 for Math and ELA classes inclusive of all students in grades 3-8. This proactive technology analysis will benchmark a district and their schools in several key areas and provide a technology readiness score that will ultimately lead to a roadmap of detailed tasks and deliverables that are necessary to improve any of the deficient areas.

The three specific objectives of this analysis are:

1. Analyze the strengths and weaknesses of the school district and quantify their ability to carry out the online testing activities in 2017 and beyond while documenting any major gaps in "readiness."

2. Work with the district to identify recommendations to bridge the gap between where the district is and where they need to be in terms of technology readiness to carry out these activities.

3. Collaborate with the district to put in place a blueprint for completing any tasks (or procurements) necessary to achieve "technology readiness."

Analysis Background

During the 2015 budget planning period, Superintendent Molly Spearman championed the General Assembly to consider the request of reserving a portion of the K-12 Technology Initiative funds for the purpose of providing technology technical assistance to rural and less affluent districts of need. After funds were allocated through the Proviso, the Superintendent's office called together a small Advisory Task Force to begin exploration of a plan of action to implement the initiative. The Task Force included South Carolina Department of Education (SCDE) staff, representation from rural school districts, legislative representation, and private sector.

The Proviso states:

"1.94. (SCDE: Technology Technical Assistance) Of the funds appropriated for the K-12 Technology Initiative, the department is authorized to withhold up to $350,000 in order to provide technology technical assistance to school districts."

The purpose and spirit of the Proviso is for the SCDE to provide technology-consulting services ("technology technical assistance") to school districts that would otherwise struggle in securing such services and resources. In particular, consulting services would initially focus on evaluating the state of technology, in participating districts, as it relates to readiness for standardized, online assessments beginning in 2017 and the capacities to offer quality computing based instruction, including Wi-Fi availability for support of instruction.

Proposed District Participants:

While there are a substantial number of rural-based districts in the South Carolina public school system, funds allocated for this year's initiative may not be adequate to offer high quality and much needed external, independent consulting services to all districts of need. Therefore, it is recommended that initial focus be placed on the plaintiff districts involved in the lawsuit between districts and the state (Abbeville vs. South Carolina.) and any other rural districts identified by the State Superintendent's office. As time and funding are available, other rural districts may be included. There were initially at least 30 districts involved in the state suit and about 9 remained by the end of the suit. All of the original Abbeville Law Suit districts have been given the opportunity to participate in the Online Testing Technology Readiness Analysis.

Proposed Consulting Resources/Partners:

The South Carolina Department of Education did not have adequate staffing to fully offer technology consulting services of this magnitude. Therefore, it was suggested that SCDE seek and secure external, independent contracted services to facilitate this initiative. The state interviewed several industry-consulting resources and opted to leverage a lead consultant who helped the state with the analysis and writing of the Educational Technology Plan for years 2014-2017. Robert Cardelli was contacted in late 2015 and the consultant team was finalized and officially began work the second week of November 2015.

Initial Outcomes:

As a result of the initiative, each participating district receives a personalized report detailing the consultants' findings and recommendations as to the district's technology readiness for state and other online assessments, 1:1 computing, and enhanced Internet connectivity (Wi-Fi) for the support of instruction in their schools. A blueprint outlining specific steps the district and their schools need to focus on is presented to the district's superintendent as part of the final report.

Evolution of Online Testing Requirements

No Child Left Behind legislation required states to measure students' progress in reading and mathematics annually in grades 3-8 and at least once in grades 10-12 by 2005-2006. The *Every Student Succeeds Act* (ESSA) maintains the requirement that each state implement "a set of high quality student academic assessments in mathematics, reading or language arts, and science" (114th Congress, 2015, p. S.1177-24) among its provisions. Further, mathematics and reading or language arts assessments will be administered in each of grades 3-8, and at least once in grades 9-12.

Beginning in the 2014-2015 school year, learners faced a new testing challenge in that their assessments of learning will be via online testing of the Common Core standards. Assessments are being developed by organizations such as PARCC, DRC, ACT and SBAC. Tests may take learners from 8-10 hours to complete and must be integrated into the school's daily and weekly calendar of events to complete the necessary activities. (Doorey, 2014; Gewertz, 2013). Online testing has posed concerns about required technology, sufficient bandwidth, computerized test security, learners' technology skills, and new forms of test anxiety.

States Must Become Familiar with Updated Legal Policies for Computerized Testing

Computerized testing raises new issues that require updating of test security laws and policies, as policies written for standardized testing administered via paper-and-pencil are no longer sufficient. ACT has a highly relevant report in this regard: The End of Erasures: Updating Test Security Laws and Policies for Computerized Testing by Michelle Croft (2014).

Croft (2014) outlined many concerns, noting that computerized testing does not eliminate cheating and test piracy. Such practices just take on different forms. Unique risks include such things as educators logging in to tests to view questions or change student responses, computer hacking, keystroke logging, printing, emailing, or storing test information in a computer outside the test delivery system. There is a greater risk of students accessing the Internet and other programs during testing. There is great concern about students using their own devices for testing and who has administrative privileges. Technology staff and teachers need to consider how testing workstations need to be positioned and secured so that students can't see what's on the monitors of others.

Croft (2014) recommended that states update their state statutes and regulations to reflect the shift to computer-administered assessments, concentrate efforts on controlling test access, and ensure that there is a single test security section within the updated manual that contains answers for any question that a test administrator has about test security. For example, policies should consider how student login information is secured. There should be rules on how tests are reactivated if disrupted. Additionally, these rules should emphasize having more than one proctor aid in the reactivation, and most importantly, proctors should maintain a log of all reactivations to provide documentation in the event of an investigation. Likewise, the technology should be secure and the testing window should be as short as possible to reduce the likelihood that items are compromised. Finally, states should implement steps to actively monitor test access issues through data reports to determine if there have been excessive logins or logins at times when testing should not occur (e.g., on the weekends), and have clear policies in place detailing how violations will be handled.

The test security section should also include an itemized list of what materials are secure (e.g., work folders, student authorization tickets with IDs and passwords, session rosters, scratch paper, reference sheets). "Information about who can access the test should be clearly articulated across the school and communicated to all proctors on the day of testing. In addition, there should be information on how to report test security concerns and possible violations, which can be applicable regardless of the testing format" (Croft, 2014, p. 4).

It is vital for states to adequately prepare districts and schools for the evolving testing requirements and to proactively ensure educators and students are familiar with any new policies regarding computerized test administration, including what they, test proctors, and students may and may not do. Having these policies and procedures in place is critical to the success of the testing process and the legal implications for violating any of these policies are potentially severe. Advance planning and communication is required to minimize the risks associated with testing. Any technological failures in the administration of the tests could spark an outcry to invalidate the results; especially considering that high-stakes test scores are factored into school grades, teacher salaries, and federal assistance to the state. The stakes are too high!

Changes in E-Rate Rules Will Affect Funding for Districts

The federal E-Rate Program started redirecting funding support FY 2015 (7/1/2015-6/30/2016) to focus on high speed broadband connectivity and Wi-Fi to tackle the digital divide concern. This included no longer providing funding or reducing funding support for outdated, legacy, and non-broadband related services such as…Page 12 ref: https://apps.fcc.gov/edocs_public/attachmatch/DA-14-1556A1.pdf ***FCC Order 2015, 2016:http://www.usac.org/_res/documents/sl/pdf/ESL_archive/EligibleServicesList-2016.pdf

Page 2 summary reads as follows:

"The E-rate program: (1) restructured the former Priority One and Priority Two categories into Category One and Category Two; (2) eliminated Category One (former Priority One) support for outdated, legacy, and other non-broadband services including web hosting, email, and paging; (3) adopted a phase out of support for Category One voice services; and (4) limited Category Two support to the internal connections needed to enable high-speed broadband connectivity within schools and libraries, specifically LAN/WLAN (local area networks/wireless local area networks)-focused components (broadband internal connections components), basic maintenance of eligible broadband internal connections components, and managed internal broadband services."

Services and Components No Longer Eligible for Support (Effective Funding Year 2015)

Category Two (Priority One)	Category Two (Priority Two)
Services and telephone components that were listed as eligible in the former Priority One category: • 900/976 call blocking • Custom calling services • Direct inward dialing • Directory assistance charges • Email • Inside wire maintenance plans • Paging • Text messaging • Voice mail • Web hosting	Components included in these former Priority Two entries: • Circuit Cards/Components • Data Protection (all except for firewall and uninterruptible power supply/battery back-up) • Interfaces, Gateways, Antennas (other than as specified in this Order) • Servers (other than servers necessary for caching) • Software (other than the software that supports eligible broadband internal connections) • Storage Devices • Telephone Components • Video Components • Voice/video IP components (that had been listed in the Data Distribution entry)

Many districts have relied on this funding support since the start of the E-Rate program 18-years ago. Some districts rely on this funding reimbursement to purchase additional technology/services. Others used this to pay for operational (staff, etc) expenses.

Eligible voice services are subject to an annual 20 percentage point phase down of E-rate support beginning in funding year 2015, as described in the *E-rate Modernization Order*. The reduced discount rate for voice services will apply to all applicants and all costs for the provision of telephone services and circuit capacity dedicated to providing voice services.

South Carolina's Testing Requirements

The South Carolina College- and Career- READY Assessments (SC READY) are statewide assessments in English language arts (ELA)* and mathematics that will meet all of the requirements of Acts 155 and 200, the Elementary and Secondary Education Act (ESEA) , the Individuals with Disabilities Education Improvement Act (IDEA), and the Assessments Peer Review guidance.

All students in grades 3–8 are required to take the SC READY except those who qualify for the South Carolina National Center and State Collaborative (SC-NCSC).

SC READY Assessments are not timed, and both computer-based and paper-based testing will be available. Data Recognition Corporation (DRC) is the contractor.

*** The ELA test will be a two-day test: Session 1 (Writing) and Session 2 (Reading) for all grades.**

Estimated Times for the SC READY Assessment*

Grades	ELA Session 1	ELA Session 2	Mathematics
3-8	2.5 hours	2.5 hours	2 hours

*The SC READY assessments are not timed. The Office of Assessment is providing estimated times to assist with classroom scheduling. Since there are no previous testing times to serve as a guide for SC READY, these estimates represent the Office of Assessment's best approximations. "Start" and "Stop" times will be collected this year so that more accurate estimated times may be provided in the future. Please note that SC READY includes some new item types designed to measure a more demanding set of standards. As a result, it is anticipated that in the first year of SC READY, students may require longer testing times than in previous years.

Links:

http://ed.sc.gov/tests/middle/sc-ready/sample-items/
http://ed.sc.gov/tests/middle/sc-ready/
http://ed.sc.gov/tests/middle/adoption-list-of-formative-assessments/
http://ed.sc.gov/scdoe/assets/File/tests/assessment-information/test-dates/SCREADYDates15-16(1).pdf
http://ed.sc.gov/tests/elementary/general-information/

Overview of Technology Readiness Analysis Team

A team of independent consultants has been hired by the State of South Carolina to conduct all aspects of this assessment. The objectivity that outside resources bring to the table has helped reduce the perception that "big brother" is searching for negative data points on a district's leadership team. The use of third party resources has helped foster open and honest dialogue and allowed the district staff and consultants to collaborate in all aspects of the process. The team is comprised of the following individuals:

- **Rob Cardelli**

  - Project Manager overseeing all facets of the analysis
  - More than 20 years of education and government consulting expertise
  - Personally worked with over 100 education customers including helping the Department of Education in South Carolina gather requirements and write the State's Educational Technology Plan for years 2014-2017

- **Brenda Bryant**

  - Local school teacher in Richland 2 school district
  - Focusing much of her attention on the readiness of students and teachers along with professional development concerns

- **Bob Jones**

  - Local I/T and Management Consultant with over 30 years of experience
  - Focusing much of his efforts on the infrastructure, hardware, security and funding concerns
  - Expert in data analytics and reporting

- **Heather Sutton**

  - Local I/T consultant currently residing in the Orangeburg 4 district
  - Focusing much of her effort on facilities, staffing levels, strategic planning and testing policy readiness levels
  - Expert in data analytics and reporting

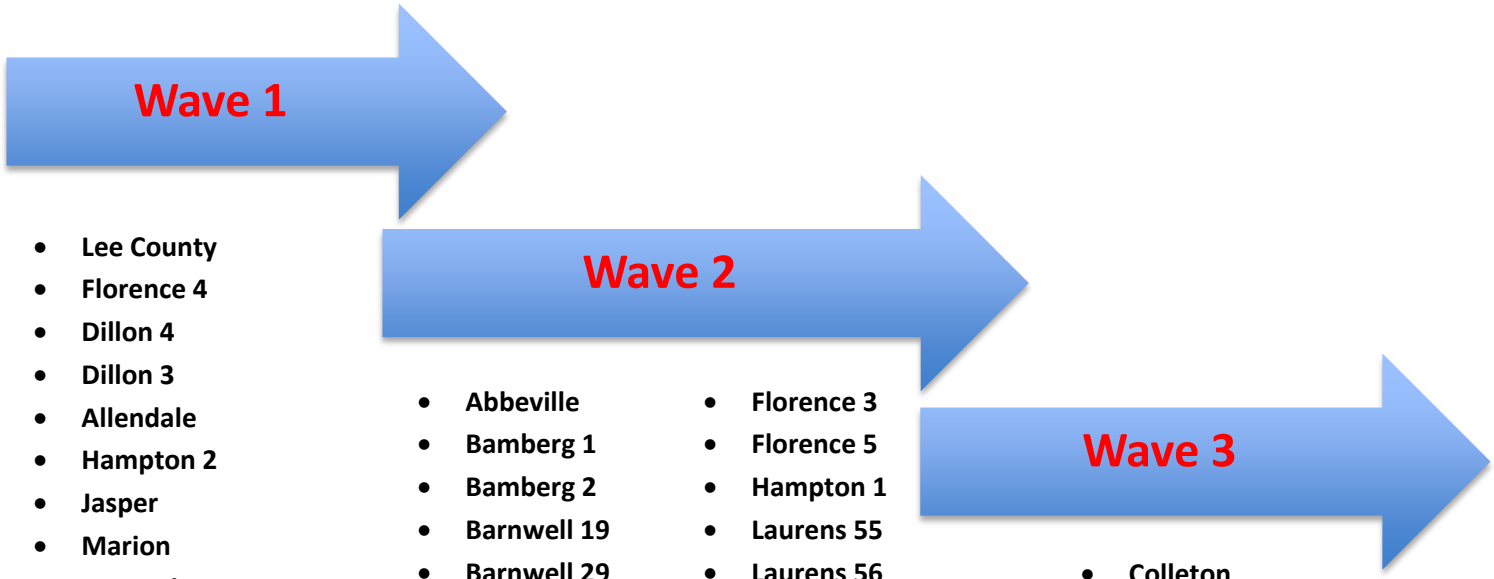
Participating Districts

The school districts that the state has identified as potential candidates for these optional readiness analysis studies have been prioritized into the following three categories:

- **Wave 1-** Includes the nine school districts that were still involved with the Abbeville Lawsuit at the time of the verdict

- **Wave 2-** Complete list of all districts participating in the Abbeville Lawsuit at any point in time over the last 20 years

- **Wave 3-** Other districts categorized as impoverished



Wave 1

- **Lee County**
- **Florence 4**
- **Dillon 4**
- **Dillon 3**
- **Allendale**
- **Hampton 2**
- **Jasper**
- **Marion**
- **Orangeburg 3**

Wave 2

- **Abbeville**
- **Bamberg 1**
- **Bamberg 2**
- **Barnwell 19**
- **Barnwell 29**
- **Barnwell 45**
- **Berkeley**
- **Clarendon 1**
- **Clarendon 2**
- **Clarendon 3**
- **Chesterfield**
- **Florence 1**
- **Florence 2**
- **Florence 3**
- **Florence 5**
- **Hampton 1**
- **Laurens 55**
- **Laurens 56**
- **Lexington 4**
- **Marlboro**
- **McCormick**
- **Orangeburg 4**
- **Orangeburg 5**
- **Saluda**
- **Williamsburg**

Wave 3

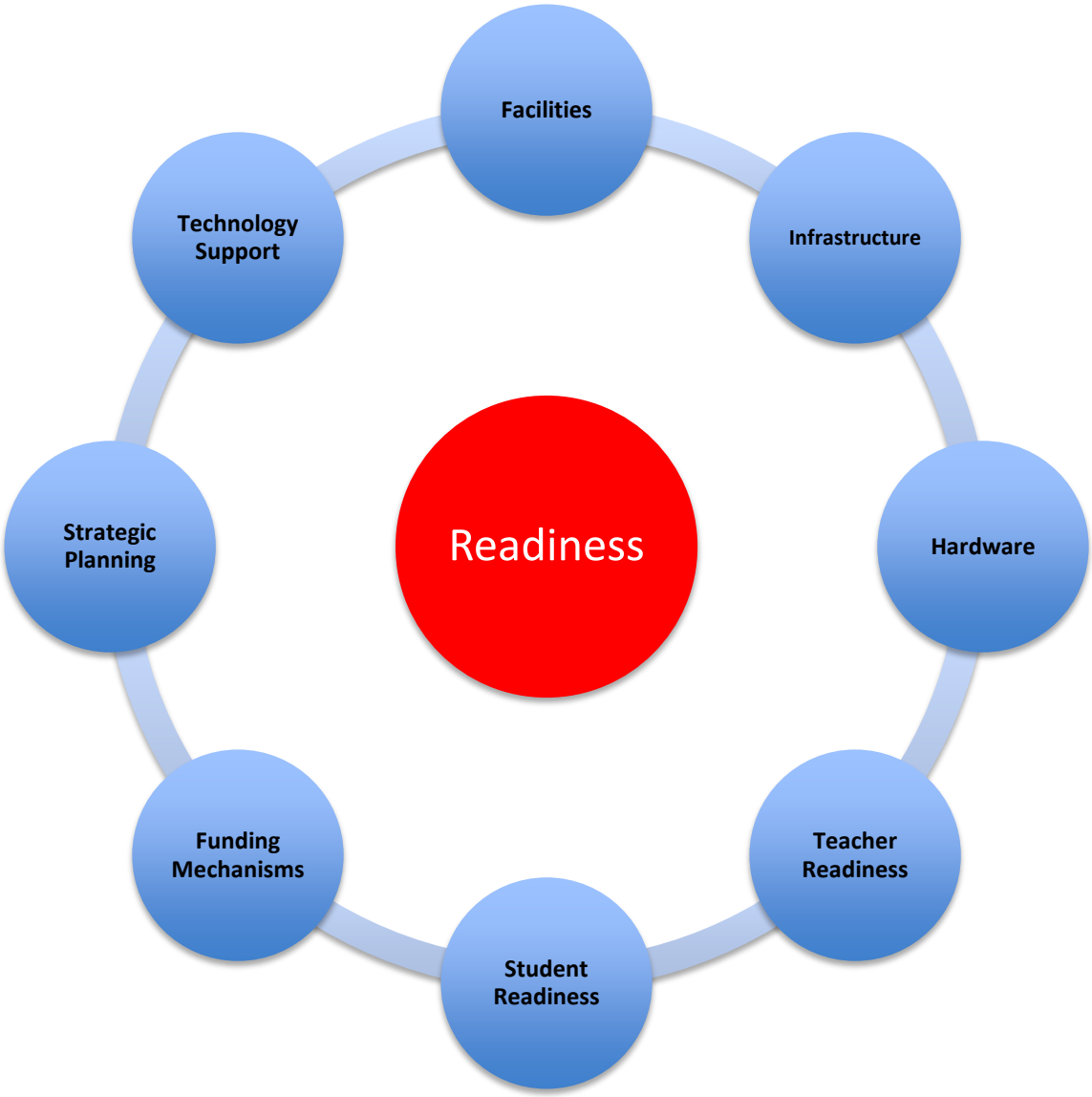
- **Colleton**
- **Calhoun**
- **Edgefield**
- **Sumter**
- **Darlington**

Analysis Methodology

The consultants worked with several of the Wave 1 districts to design and ultimately refine a methodology that allows for rapid data gathering with multiple collaboration opportunities for district staff to review the findings and edit the documentation to ensure the report accurately reflects the current state of the district. The consultants realize how busy the district staff are and created a methodology that is non-invasive in nature and flexible to allow the participants to work around their "day jobs" to reduce the impact on their daily operations.

Primary Areas of Focus

The technology analysis team identified several categories that are critical for a school district to achieve technical readiness for online testing. Within each category there are multiple variables that directly impact that category's degree of readiness. Accurately documenting these variables helps paint a picture of the overall level of readiness of the school district and also can be used to craft a blueprint for improving those deficient areas. The graphic shows the eight (8) categories currently being used to measure the degree of readiness. The following pages provide details surrounding the variables that are being analyzed during the analysis process.



Categories and Variables Being Measured

Note: These are generic categories and questions being asked are not specific to any one district. Each bullet point receives a score that is averaged for the overall section.

❑ Impact of Facilities

- How does the availability or lack of space impact the district's level of readiness?
- How does the age of the schools impact cabling, wireless, and ability to connect to the Internet?
- Does poor air conditioning or ventilation in server rooms, network closets, or computer rooms present a risk to the availability of the computers for testing?
- Are there situations where rodents chew through cables and bring down the district computer network? How long is the network down and what is the frequency of these events?
- Are there leaky ceilings, poor flooring, mold, or other environmental conditions that could impact the testing facility?

❑ Readiness of Infrastructure

- How does the amount of available network bandwidth impact the testing strategy?
- Are there any risks to testing due to the "up time" of the district (or school's) network?
- How many simultaneous testing machines can a district handle during any block of time?
- Does the district need additional wireless access points to conduct testing activities?
- Do the age and type of routers or switches impact the performance of the network and the ability of students to test in a given timeframe?
- Does the current wiring/cabling of the network impact the overall system performance? Is there anything that needs to be improved to enhance the testing experience?
- Is there any evidence that the security of the district's networks or computers could impact online testing?

❑ Readiness of Existing Hardware

- How does the number of available computers directly impact the district's ability to test?
- Is there a need to upgrade the available memory (RAM) in the testing computers? How much memory is currently in the testing machines and what (if any) performance issues have been witnessed?
- Are there any concerns over the size or quality of the testing monitors?
- Is there evidence that the different types of equipment being used for online testing directly impact the staff's ability to support the technology? Are there multiple products in use overcomplicating the support strategy and overall skills of the district staff?
- Do the current operating systems of the testing computers limit the ability to test? Are there any upgrades being planned and when will these take place?
- Are there adequate backup testing machines and/or accessories to ensure the necessary number of devices on the day of testing?
- Are there any procurements currently being contemplated and will they need to be amended to reflect changes to the testing strategy?

❑ Teacher Readiness

- Are the teachers adequately prepared for 2017 online testing requirements?
- Do the teachers require professional development training to educate them on how to better leverage technology?
- Do the teachers require assistance creating and conducting computer literacy classes for their students?
- Does the district have funding to offer computer literacy?
- What is the turnover rate of the teachers? How does the turnover rate impact the district's testing strategy?
- How do the teachers interact with the district technology staff?
- Are teachers aware of testing policies and are they properly prepared to manage testing cycles?
- Do the teachers need assistance in preparing their students for computer literacy?
- Are there any other concerns related to a teacher's knowledge or ability to assist with online testing?

❑ Student Readiness

- How does the level of computer proficiency of the student's impact online testing? Are there any concerns that students are not properly prepared to take a test on a computer?
- Does the district offer kindergarten through second grade computer classes?
- Is there any proactive analysis to identify disadvantaged students in a classroom with little to no computer literacy? What, if anything, is the district doing to help these potentially at risk students?
- Does the district allow students to check out computers to take home?
- How does a district manage situations where two different teachers leverage technology differently? Is there any analysis into the student's technology proficiency between these two scenarios?
- Does the district offer practice tests to allow the students to get familiar with the testing process and what is expected of them?
- Are students aware of testing policies and the implications?
- Is there any evidence from previous online testing cycles that students need assistance in specific areas? Examples might include: typing skills, knowledge of scrolling or potentially how to properly use a mouse.

❑ Technology Support

- How many resources are available at the district level and what are their roles and responsibilities?
- What are the main skills of the staff? Are there any skills missing in the support model?
- What functions are outsourced?
- What kind of help desk system is in place and how many ticket items are open?
- How many job duties does the staff have to perform?
- Does the district staff have any assistance from within the school?
- What would the impact be on the school's ability to test if a key resource were to call in sick or resign during the testing window?
- Are there any concerns about the availability of technology staff to support the testing process?
- Are policies and testing procedures documented and disseminated to all staff?
- Are students and their families made aware of the testing policies and schedule?
- Does the technology support team regularly communicate their needs to the administration and/or school board? What is the relationship between these parties?

❑ Funding Mechanisms

- Does the district leverage all available e-Rate funds?
- How has the district utilized e-Rate funds in the recent past?
- Does the district have experienced grant writers?
- How have technology related grants been utilized in the recent past?
- Are there any funds from e-Rate or grants that have NOT been utilized but could be leveraged to help improve the overall readiness of the district for online testing?
- Who writes the e-Rate documentation and grants? Internal or external resources?
- Are there other sources of funds the technology staff has access to and for what are they used?
- How does the district determine how the funds will be utilized?
- Are there any situations where money earmarked for technology is denied and utilized for non-technical district needs?
- What is the role of the technology staff in setting budgets and preparing for online testing needs?
- Is there a formal mechanism for cross training multiple district staff in the rules, regulations and nuances of applying for e-Rate, grants or other funding sources?
- How are the district's funds allocated for student computer literacy being spent?

❑ Strategic Planning

- Does the district have an up to date district wide strategic plan?
- Does the district have an up to date district technology strategic plan?
- Are the district's strategic plan and the TECHNOLOGY strategic plan properly aligned?
- What is the level of involvement of the local school board?
- Who is involved in strategic planning?
    - *Superintendent?*
    - *Teachers/Faculty?*
    - *I/T staff?*
    - *Local Vendors?*
- How does the district proactively plan for new technology acquisitions?
- How do the schools leverage district I/T staff?
- How are students or teachers leveraged?
- How are local technology vendors utilized?
- What is the level of involvement with the local "consortium"?
- How does the technology staff procure hardware or services?
- Is there a risk of "single point of failure" with the district staff member?
- Does the district need specific training in proper strategic planning?
- What assistance is required from the state?

Overview of Readiness Rating Scale

To evaluate the readiness of a district in multiple areas the team created a rating scale to objectively measure how effectively (or ineffectively) a particular area rates compared to other districts. After each area has been given a score the analysis team compiles the statistics and averages them to derive a final readiness score for the district. To simplify the process the consultants used a scale of 1-5 that increases in increments of half a point. The following scale will be used to track future readiness decisions:

Rating	Description
1	The district is unable to prove they can successfully complete online testing in 2017.
2	The district could feasibly conduct testing in 2017 but there are multiple areas that need to be improved to make this happen and if they are not completed testing will more than likely be unsuccessful.
3	The district will be able to meet the 2017 Online Testing requirements. The district will not be able to handle additional subjects or grade levels without significant improvement in multiple areas.
4	The district will be able to meet the 2017 Online Testing requirements and they can meet a few extra subjects or grades but not all future needs.
5	The district is prepared for 2017 and beyond. They do not have any measurable risks associated with Online Testing for 2017 or beyond. They can handle online testing for all grades and subjects.

Summary of Findings for Clarendon School District 3

Overall Readiness Score	2.5

Impact of Facilities

Readiness Score	2.3

Area of Focus	Observations	Recommendations
Availability of Testing Labs	• 1 lab at Walker-Gamble Elementary, some space for another lab with additional wiring. • 2 labs at East Clarendon Middle-High. No additional lab space available.	• Additional labs or computer carts will be required in order to complete testing with the State's testing window. • Additional wiring will be needed to setup additional labs.
Age of Buildings and Impact on Cabling and Wireless Connectivity	• Walker-Gamble Elementary built 1950, expanded 1997. • East Clarendon Middle-High built 1952, renovated 1998. • Inadequate amount of wiring per room, poor location of drops. • Wireless signal too weak/inadequate coverage.	• Additional network cabling is required to provide adequate coverage to all labs. • Additional access points required to address week wireless coverage.
Environmental Concerns (i.e. mold, air conditioning and ventilation concerns, excessive noise)	• Noisy HVAC units at Walker-Gamble Elementary.	• Issues with noisy HVAC units need to be addressed to determine how noise can be reduced. Noisy HVAC results in a compromised testing environment that could result in lower test scores.
Condition of desks and chairs where students will be testing	• Walker-Gamble Elementary has old Furniture in lab. • East Clarendon Middle-High has old furniture in some labs.	• Comfortable and stable, age appropriate furniture should be available to all students. Lack of comfortable desk and chairs creates an unfair disadvantage for students.

Infrastructure

Readiness Score	3.0

Area of Focus	Observations	Recommendations
Available Bandwidth to the district	• District currently has 150 mbps serving approximately 1178 students plus teachers and administrative staff.	• Formal analysis of the network's configuration to determine if the available bandwidth is able to meet the needs of the district during online testing activities. Contracting with 3rd party experts may be necessary to ensure the routers, switches, access points and cabling are properly integrated and successfully maximizing the available bandwidth. Corrective action should be taken to further "tune" the networks and support components. There are specialized tools available to help assess a network's efficiency and it may be necessary to leverage a 3rd party to help justify purchasing additional incoming bandwidth to rectify the performance challenges.
Stability of Networks Within The Schools	• Network is stable in schools and between district office and schools.	• Load testing of network at each school recommended to ensure network will support on-line testing and other educational uses of the network.
Available Bandwidth to the Schools	• East Clarendon Middle-High has 10 GB from district office. • Walker-Gamble Elementary has 500 mbps from district office.	• Technology Coordinator has done an excellent job creating a robust network form district to schools • Walker-Gamble Elementary bandwidth needs to be upgraded to a minimum of 1 GB to support all network traffic.

Cabling Challenges	• Difficulty drilling holes in concrete walls. • Limited ceiling space for running cable. • Conduit is required for all wiring in classrooms.	• Because of cabling challenges the district faces when adding new wiring, the cost is considerably higher and additional funding is required.
Wireless Networks • Routers • Access Points • Bandwidth • Switches	• Performance testing revealed wireless signal too weak and bandwidth to classrooms is inadequate. • There is one access point for every four classrooms.	• Locations for additional wireless access points need to be identified and addition access points installed.

Hardware

Readiness Score	2.5

Area of Focus	Observations	Recommendations
Number of Computers Available for Testing	• Only 25 desktop computers at Walker-Gamble Elementary. • There are 55 desktop computers and 30 laptop computers (14" Chrome books) at East Clarendon Middle.	• Additional desktop or laptop computers are required for 2017 testing at Walker-Gamble Elementary. • Additional desktop or laptop computers will likely be required for East Clarendon Middle to support 2018-2020 on-line testing.
Age and ability to upgrade computers	• Computers at Walker-Gamble Elementary are 3 years old. • Computers are 3 to 5 years old at East Clarendon Middle-High. Laptop computers are 3 years old.	• 5 year old computers are approaching end of useful life and a replacement and funding strategy should be in place.
Available RAM (Memory) in testing computers	• Desktop computers at Walker-Gamble Elementary have 4GB available RAM. • Desktop computers at East Clarendon Middle Elementary have 4GB available RAM. • Laptop computers at East Clarendon Middle Elementary have 4GB available RAM.	• Consultants consider 4GB RAM the minimum required to support on-line testing. We are recommending 8 GB RAM whenever possible to fully utilize increased incoming bandwidth to the district and the increasing use of on-line educational video content.
Disaster Recovery Solution	• Local backup only, no offsite or cloud solution currently in use. This would be a significant ongoing expense for the district. • Hardware failure of security breach would compromise the ability to conduct on-line testing.	• A disaster recovery solution is needed to ensure the district's platforms are available during online testing. • Consulting team is recommending the state offers a cloud backup and disaster recovery solution to district.

Adequate replacement hardware	• District has 4 computers as backup. • District has 4 spare batteries for laptops.	• Adequate backup systems and spare laptop batteries are essential to ensuring on-line testing is available to all students. • Replacement and backup computers as well as switches and other network hardware need to be addressed when new hardware is purchased.
Support and Replacement Strategy	• Planned strategy is to replace computers every four years. • Limited and unpredictable funding sometimes cases district to have to extend replacement beyond four years.	• An ongoing replacement and funding strategy needs to be developed.

Teacher Readiness

Readiness Score	2.6

Area of Focus	Observations	Recommendations
Technical Proficiency of Staff	• There are Issues with teachers not wanting to or being able to leverage technology in the classroom.	• More professional development is needed to help teachers to feel more comfortable about the technology in they are using.
Turnover of Teachers	• 92.6% retention rate.	• This is relatively high retention rate. No recommendations in this area.
Level of Technical Preparedness	• Need more on how to use technology to enhance education. Not as much of a priority as would like.	• District leadership needs to mandate dedicated time is allocated to focus on preparing for state and federal testing activities. The IT staff needs to be involved to ensure all tasks and deliverables are completed in an efficient manner.
Availability to prepare for testing	• No formal process in place. IT not always advised of testing schedule in advance. • There are significant technical issues that have to be address in order to prepare for on-line testing.	• Technology Coordinator should be kept well informed of upcoming testing in order to ensure all issues have been addressed.
Other Concerns		

Student Readiness

Readiness Score	2.6

Area of Focus		
Availability of Computer/Typing Classes for K-2	• District has a formal computer literacy program for K-2 students. • Estimated 75% of 3rd – 8th grade students are computer literate and comfortable with using computers.	• Ensure that K-2 students are being formally taught keyboarding and mouse skills.
Level of Poverty/Home Exposure to Computers	• 67.1%.	• This is a relatively low poverty rate but many of the district's students come from homes where heavy and consistent computer usage is unlikely. This increases the needs for formal computer literacy classes in the earlier grades
English as a Second Language Concerns	• 6.7% ESL population.	• District is already securing devices and software to ensure ESL students have the resources to successfully test on-line. No additional recommendations required.
Availability of Sample Tests	• Online practice tests are given at all schools.	• This is critical for 3rd grade and ESL students to ensure their successfully testing on-line.
Other Concerns		

Funding Mechanisms

Readiness Score	2.0

Area of Focus	Observations	Recommendations
Maximizing e-Rate	• Technology Coordinator is e-Rate Coordinator. • District is trying to maximize e-Rate but struggles with matching funds.	• Ensure the district's strategy for utilizing current and future e-Rate funds are documented in the strategic plan.
Ability to successfully manage the grant writing process.	• Minimal expertise writing grants. • Difficulty finding available grants. • District is not currently receiving grants.	• District needs resources for determining which grants are available and assist in writing grant requests.
Multiple resources knowledgeable in e-Rate and Grant Writing	• No backup e-Rate Coordinator to Technology Coordinator. • District has minimal grant writing expertise.	• There should be multiple resources in the district with a general understanding of e-Rate funding. • The district should look to collaborate with neighboring districts in this area.
Other Concerns	.	

Strategic Planning

Readiness Score	2.9

Area of Focus	Observations	Recommendations
Technical Staff Collaborates with Administrative Staff to Determine Technology Needs	• Superintendent, Director of Finance, and Technology Coordinator work together to determine district's technology needs.	• Best practices dictate that the technology staff regularly updates the school board on technology usage and needs. • No recommendations in this area.
Thoughtful analysis into how funds will be spent	• Superintendent, Director of Finance, and Technology Coordinator jointly decide how the District's limited funds are spent in supporting technology.	• It's very important that the technology staff have a methodology for educating administrative staff on technology needs and recommendations
Teachers needs are considered top priority	Technology Coordinator tries to be proactive in supporting district but frequently is in fire fighting, reactive mode in supporting teacher's needs.	• Identify and develop first line classroom technical support for each school. • Schedule predictable technology tasks for optimal utilization of limited technology staff.
The role of technology is agreed upon by all parties	• Superintendent, Director of Finance, and Technology Coordinator share a common vision on role of technology. • District School Board is supportive of technology needs.	• A technology Coach is needed to help define role of technology in the district. • The Technology Coach function could be an opportunity for a shared resource between several districts
Proper amount of professional development	• Technology Coordinator would like to see more emphasis placed on teacher's technology training as part of an increased amount of professional development.	• A technology Coach is needed to help define role of technology in the district.
Implementation, Distribution and Enforcement of Testing Policies.	• No formal process. IT not always advised of testing schedule.	• Everything dealing with online testing must be coordinated with the Technology Coordinator.

Readiness of Technical Staff to Support Online Testing

Readiness Score	2.5

Area of Focus	Observations	Recommendations
Number of support technical support staff	• On 1 person supporting entire District with over 100 PCs.	• Potentially having resources inside the schools serve as the front line for help desk items might be needed. Training of school resources OR students could help reduce the help desk ticket volume and free up I/T staff to be more strategic.
Technical skills and proficiency of support staff	• Technology Coordinator is highly skilled in networking, desktop support and Google apps.	• No recommendations are needed in this area.
Availability of staff to proactively engage with the teachers and administrative staff	• Daily responsibilities of limited technology staff allows little time for proactive engagement with teachers and administrative staff. • Technology Coordinator tries to be proactive in supporting district but frequently is in fire fighting, reactive mode.	• Potentially having resources inside the schools serve as the front line for help desk items might be needed. Training of school resources OR students could help reduce the help desk ticket volume and free up I/T staff to be more strategic.
Ability of staff to assist with professional development efforts	• Daily responsibilities of limited technology staff allows little time for assisting in professional development of teachers.	• A dedicated technology coach is warranted to focus on the teachers and free up the other staff for more strategic activities.
Risk of Single Point of Failure. If a key resource leaves will testing become at risk?	• Extreme risk of single point of failure. Technology Coordinator is a one man show. If he is not available for some reason on-line testing would probably not take place.	• There is a strong need for additional personnel. Due to the number of workstations and number of employees, it is very difficult for one person to resolve problems and maintain equipment in a timely manner.

Additional Consultant Observations

Highlighted below are the most frequently cited strengths of the school district, which can be used as a foundation for creating a roadmap to address any areas of concern. The items in the table are rank-ordered according to the frequency with which they were mentioned in the interviews. Multiple points of engagement took place with a minimum of two analysis team members involved with every district.

Rank	Strengths	Common Themes
1	Willingness to improve	Everybody wants this to happen. A lot of people are ready for change. Everyone is tired of fighting fires and not having the ability to proactively address many of the things that need to be corrected.
2	Attitude / Enthusiasm	Extremely eager to make testing a success. Cooperative and positive attitude of management and staff. Excitement and positive attitude toward this project.
3	Work well together	Sense of collegiality - we work well together. We're small; we'll pull together to make this happen. Partnerships among schools, other districts and/or vendors. We will come together on this.
4	Dedication	Level of commitment. Very dedicated people, people who are willing to get the job done and get it done well. Hard workers who are willing to do whatever it takes to get the job done.

Commonly Cited Concerns

Listed below are the most frequently cited concerns about testing that were documented over the course of the analysis process.

Rank	Concern	Sample Answers
1	Budget	Concerns that the funds that will be necessary to procure additional infrastructure, hardware and/or professional development will be insufficient.
2	Schedule / timeline	Time it will take to plan, procure, implement, test and train staff is in adequate to prepare for Spring of 2017 given the ongoing workload of the district staff.
3	Staffing Levels and Workload	Inadequate staff to complete the workload to prepare for testing. The focus on assisting teachers and their classroom technology consumes the majority of the staff's time leaving little availability for additional tasks.
4	Lack of Professional Development	New or upgraded technology will require significant training. There are limited funds available for professional development and few resources available to conduct the training.
5	Disaster Recovery	Limited funds available for proper disaster recovery.

District's Inventory of Readiness Needs

Category	Specific Need	Specific Need Details	Vendor	Quantity	Estimated Cost	Recurring Cost	Potential Funding Source	Date Needed
Facilities	Space/Testing Rooms	Portable Unit	Unkown	2	200,000.00	0.00	TBD	ASAP
	Air Conditioning Cost	AC Unit	TCS	10	53,000.00	0.00	TBD	ASAP
	Roof/Ceiling Repair	School Roof Repair	Unkown	2	210,000.00	0.00	TBD	ASAP
	Desks	Desks	Amazon	60	8,000.00	0.00	TBD	ASAP
	Chairs	Chairs for Labs		60	8,000.00	0.00	TBD	ASAP
	Other				0.00	0.00		
Category	Specific Need	Specific Need Details	Vendor	Quantity	Estimated Cost	Recurring Cost	Potential Funding Source	Date Needed
Infrastructure	Bandwidth	1Gb Metro Connection	Spirit Tlcm	1	0.00	3000.00	TBD	ASAP
	Routers	Meraki MX400	Disys	1	12,000.00	12500.00	TBD	ASAP
	Switches	Meraki MS320	Disys	20	140,000.00	0.00	TBD	ASAP
	Access Points	Meraki MR42	Disys	60	51,000.00	0.00	TBD	ASAP
	Cabling	Fiber Replacement	NetPLanner	1	40,000.00	0.00	TBD	ASAP
	Content Filter Licensing	Web Filter/Intrusion Deteciton	Meraki		0.00	10000.00	TBD	ASAP
	Disaster Recovery	Offsite DataCenter	Immedion	1	1,000.00	9600.00	TBD	ASAP
	Disaster Recovery	Server for Offsite	Dell	1	12,500.00	0.00	TBD	ASAP

	User Management System	Leveldata Student User Mngmt	leveldata			10000.00	TBD	ASAP
	Other	Backup Software Solution for ALL servers	R1Soft		0.00	9000.00	TBD	ASAP
Category	Specific Need	Specific Need Details	Vendor	Quantity	Estimated Cost	Recurring Cost	Potential Funding Source	Date Needed
Hardware	Laptops	Chromebook	Lenovo	360	126,000.00	0.00	TBD	ASAP
	Desktops	HP ChromeBox	HP	250	132,500.00	0.00	TBD	ASAP
	Memory	8GB upgrade	CDW	100	5,000.00	0.00	TBD	ASAP
	Operating System Upgrade	Campus3 Licensing	SHI		0.00	7000.00	TBD	ASAP
	Monitors					0.00	TBD	ASAP
	Computer Carts (Cart Only)	Laptop Carts	STS	20	20,000.00	0.00	TBD	ASAP
	Extra Batteries					0.00	TBD	ASAP
	Installation/Testing	Deployment Software	Ninite		0.00	2500.00	TBD	ASAP
	Other				0.00	0.00	TBD	ASAP
Category	Specific Need	Specific Need Details	Vendor	Quantity	Estimated Cost	Recurring Cost	Potential Funding Source	Date Needed
Teacher Readiness	Type of training needed by grade and by topic	District CEU / Graduate Courses		2	11,000.00	12000.00	TBD	ASAP
	Teacher's Knowledge of Online Testing Requirements including security	SDE			0.00	1500.00	TBD	ASAP

	Teacher's attend off-site professional learning institutes / workshops					8000.00		ASAP
	Other	PD Tracking System (Technology Proficiency Program)			0.00	18000.00	TBD	ASAP
	Instructional Technology Coach	Salary and Fringe for District Instructional Technology Coach				60000.00		ASAP
Category	Specific Need	Specific Need Details	Vendor	Quantity	Estimated Cost	Recurring Cost	Potential Funding Source	Date Needed
Student Readiness	Computer Literacy Curriculum	Online Software Suite	TBD		0.00	20000.00	TBD	ASAP
	Computers needed for training	Lab Cart	Lenovo	60	22,000.00	0.00	TBD	ASAP
	Practice Tests				0.00	0.00	TBD	ASAP
	Other				0.00	0.00	TBD	ASAP
Category	Specific Need	Specific Need Details	Vendor	Quantity	Estimated Cost	Recurring Cost	Potential Funding Source	Date Needed
Funding Mechanisms	Assistance/Training for Writing Grants	Grant Writer	TBD		0.00	4500.00	TBD	ASAP
	Assistance/Training to manage e-Rate	eRate Consultant	TBD		0.00	14500.00	TBD	ASAP
	Other				0.00	0.00	TBD	ASAP

Category	Specific Need	Specific Need Details	Vendor	Quantity	Estimated Cost	Recurring Cost	Potential Funding Source	Date Needed
Strategic Planning	Consulting Assistance to educate staff in the strategic planning areas				0.00	0.00	TBD	ASAP
	Formal Training of Staff	IT Certification Training	Various		0.00	4140.00	TBD	ASAP
	IT Certifications	Test Costs	Various			2000.00		ASAP
	Other	IT Training Offsite	Various		0.00	5000.00	TBD	ASAP
Category	Specific Need	Specific Need Details	Vendor	Quantity	Estimated Cost	Recurring Cost	Potential Funding Source	Date Needed
Technical Support	Consulting Assistance to help in specific areas	Various Consultation	Various		0.00	7500.00	TBD	ASAP
	Additional resources	pfSense Firewall Gold Support	pfSense		0.00	99.00	TBD	ASAP
	Remote Management	Labtech Solution				42000.00		ASAP
	Salaried Employees	Two IT Support Staff Salary and Fringe				155000.00	TBD	ASAP
	Other				0.00	0.00	TBD	ASAP

Strategic Roadmap

This section will provide an overview of the specific action items the district should focus on to improve the readiness of each area discussed in this report. The Roadmap is broken down into measurable tasks and deliverables to

1-Month Plan

- **Roof Repair**
- **Infrastructure Upgrade and Wiring**
- **Laptop Carts**

3-Month Plan

- **Lab upgrades**
- **Faculty Professional Development**
- **Server/DR Installation and Upgrade**

6-Month Plan

- **Chromebook Carts**
- **Test Training**
- **New Lab installation**

12-Month Plan

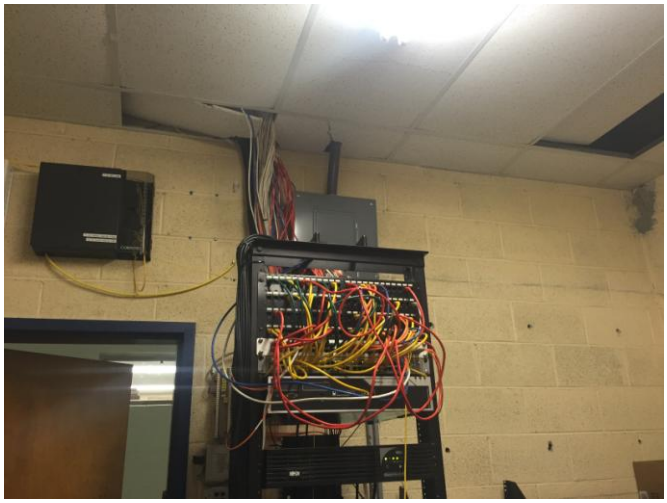
- **Faculty Professional Development**
- **Lab Upgrade/Replacement**
- **Facilities upgrade for Lab Installation**

18-Month Plan

- **Chromebook Carts**

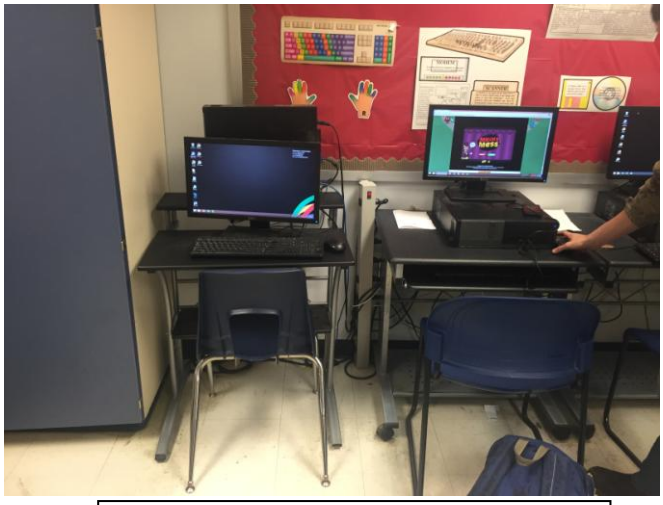
APPENDIX

Pictures of District



Data Rack

Data Racks with missing AC



Computer Lab mismatched chairs

Computer Lab